

Amendments to the Drawings:

Please replace sheet 1/3, containing Figures 1(a), 1(b) and 1(c) by the attached replacement sheet 1/3. In Figure 1(a), element 12, showing a spacer, has been added.

Attachment: Replacement Sheet

Annotated Sheet Showing Changes

REMARKSAmendments

In the descriptive part of the specification, several headings have been inserted, and various typographical errors have been corrected. Element 12, identifying the spacer described in claim 6 and in paragraphs [0029], [0035], and [0040], has been added to those paragraphs and to the description of Figure 1(a).

In the claims, the subject matter of claims 2 and 3 has been incorporated into claim 1. As a result, claims 2 and 3, and all claims dependent on claims 2 or 3 have been either amended to be dependent on claim 1 or have been canceled. In addition, claim 1 has been amended to recite that the conductive material layers comprise metal foils. (Basis is found in paragraph [0030].) These amendments have been made in the interest of rapid prosecution and without prejudice to Applicant's right to prosecute claims of similar or different scope to the unamended claims in one or more continuation applications.

The Objection to the Drawings

Applicant respectfully traverses the objection to the drawings under 37 CFR § 1.83(a) in view of the amended Figure 1(a). Claim 6 refers to a space. Spacer 12 has been identified in Figure 1(a). Basis for this amendment is found in paragraphs [0029], [0035], and [0040], all of which describe the right and left edges of the contact part 2a as suitable for use as a spacer, which may be in the form of a plate.

The Objection to the Specification

Applicant respectfully traverses the objection to the specification in view of the proposed amendments.

The subtitles in the specification have been amended to conform to U.S. practice. On page 4, paragraph [0004], the first occurrence of the abbreviation "PTC" has been spelled out. The reference to "Patent Literature 1" in paragraph [0006] has been deleted, and the cited document has been included in paragraphs [0004] and [0015] where the phrase "Patent Literature 1" occurred. In paragraph [0005], the second sentence has been rewritten. Although the proposed rewritten sentence is not what was suggested by the Examiner, Applicant believes that

it is clear. If the Examiner disagrees, Applicant will amend it in accordance with the Examiner's suggestion.

The Rejection Under 35 USC § 112

Applicant respectfully traverses the rejection of claims 1-17 under the second paragraph of 35 USC § 112, insofar as the rejection is applicable to the amended claims.

Claim 1 has been amended to recite the presence of first and second terminals (rather than "at least two terminals"), and claim 7 has been amended accordingly to recite the presence of a third terminal. (Claim 13 has been canceled.) Applicant believes that one skilled in the art who read these amended claims would have no difficulty in determining which terminals were being referred to.

The Rejection Under 35 USC § 103(a)

Applicant respectfully traverses the rejection of claims 1-17 under 35 USC § 103(a) as unpatentable over Bingo et al. (U.S. Patent No. 4,833,280) in view of Bauer (U.S. Patent No. 5,473,495), insofar as the rejection is applicable to the amended claims.

The present claims are directed to a switch that includes a conductive movable member and at least first and second terminals. The switch is switchable by mechanically moving the movable member between a state in which the movable member contacts with the two terminals simultaneously and a state in which the movable member is apart from either one of the two terminals. At least one of the first and second terminals comprises a conductive contact part for contacting with the movable member, a conductive connect part for being electrically connected with an external element, and a PTC member located between the contact part and the connect part. As such, the switch provides overcurrent protection, as set out in paragraph [0023]. An important advantage of the switch is that in one embodiment the switch is suited for being mounted directly on a printed circuit board (PCB) substrate so that the PCB substrate holds terminals of the switch in the correct positions to facilitate production of the switch (see paragraph [0023], lines 3-8). In one embodiment, by making the PTC member in the form of a layer which is positioned parallel to the substrate to which the terminals are fixed, conduction through the PTC member is over a relatively large area and over a relatively short thickness. By providing such a high area to thickness ratio, the resistance provided by the PTC element will be consequently low. A reduction in the overall resistance presented by the switch is advantageous

(see paragraphs [0015] and [0023]). A further advantage of one embodiment is that a robust switch is provided. The tendency of parts to become detached from the PTC element is low and the PTC element can be held securely in place by being positioned between conductive material layers, e.g. metal foils, which are connected with contact and connect parts of a terminal which is fixed to the substrate (see paragraphs [0008] and [0014]).

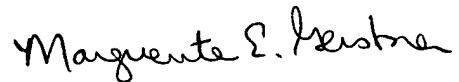
Bingo et al. discloses a slide switch in which a casing surrounds several fixed contacts and several terminals connected to the fixed contacts that extend to the outside of the casing. A slide member inside the casing has a movable contact portion that selectively connects a combination of the fixed contacts. There is no disclosure of a polymer PTC member located between the contact part and the connect part and there is no suggestion that the presence of such a PTC member would be advantageous or needed for handling high current loads.

The deficiencies of Bingo are not resolved by the addition of Bauer. Bauer discloses a combination load controller for positioning between a power source and a load. A conductive polymer and an electromagnetic switch are positioned between the input and output terminals, the conductive polymer going to a high resistance state when exposed to a high current. A conductive armature bar is used to open and close contacts. The resulting controller provides short circuit protection and overload protection. It would not be obvious to combine Bingo with Bauer. Because Bingo does not teach any need for handling high current conditions, there would be no motivation to add a PTC element to Bingo's slide switch. In contrast to the Examiner's contention that "surfaces of terminal portions in contact with the PTC material, disclosed by Baur [sic], is taken as conductive material layer", the present claims as recited require the presence of metal foil layers contacting the PTC material. As a result, this rejection is unfounded.

Conclusion

It is believed that this application is now in condition for allowance and such action at an early date is earnestly requested. If, however, there are any outstanding issues which can be usefully discussed by telephone, the Examiner is asked to call the undersigned.

Respectfully submitted,



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